

## Lab Framework

**Text:** CORD

**Unit number and title:** Unit 9 Using Ratio and Proportions

**Short Description:** This lab focuses on proving the value of pi. The student is asked to use a variety of circular objects with different diameters. The ratio of the circumference and diameter of the circle

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### Lab Title

## Finding the Value of Pi

### LAB PLAN

**TEACHER:** Teacher Prep/ Lesson Plan

- **Lab Objective**

The objective of this lab is to determine the **value of Pi**

- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)

Students will need to know the basics of circular measurements

The reading of a ruler

- **Vocabulary**

Circumference, Diameter, Pi

- **Materials List (per team)**

Rulers

String

6 cans of various sizes (diameters) per team

- **State Standards addressed**

Math: 6.3 A

Reading:

2.1.4. Apply comprehension monitoring strategies for informational and technical materials, use prior knowledge.

2.1.5. Apply comprehension monitoring strategies for informational and technical materials, complex narratives, and expositions: synthesize ideas from selections to make predictions and inferences.

Writing:

2.2.1. Demonstrates understanding of different purposes for writing.

2.4.1. Produces documents used in a career setting.

- **Set-up information**

Set up is straight forward requiring 6 can of various sizes, ruler, and string  
Students must observe safety rules and be very careful with all equipment.

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)

Students will follow the basic groups of three format— Team Spokesman, Team Recorder and Team Checker

- **Teacher Assessment of student learning** (scoring guide, rubric)  
The teacher may use any scoring guide related to labs
- **Summary of learning** (to be finished after student completes lab)
  - discuss real world application of learning from lab
  - opportunity for students to share/present learning
- **Optional activities**  
If students are interested, the teacher may extend the lab to advance topics in the study of circles and the history of the derivation of Pi.  
This website may be used as a reference:

[http://www.learner.org/courses/learningmath/measurement/session7/part\\_a/ratio.html](http://www.learner.org/courses/learningmath/measurement/session7/part_a/ratio.html)

<https://wa-appliedmath.org/>

## LAB TITLE: Calculation of a Spring Constant

### STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**  
This lab addresses the problem of calculating the value of Pi which is the most famous ratio in mathematics

- **Grouping instructions and roles**

Grouping for students consists of the following makeup: Team Spokesman/Leader, Team Recorder and Team Checker

Each team will have three members with these specific duties as follows:

**Team Spokesman:**

Reports the progress of the team to the teacher and is the only one allowed to articulate team questions. Announces the team's results to the class

**Team Recorder:**

Keeps track of any written work the team has to do

Helps in the formulation of any team questions

**Team Checker:**

Double checks the results of any computations or calculations

Helps in the formulation of any team questions

Performs the lab procedures

- **Procedures** – steps to follow/instructions

1. Take any can and measure the distance to the nearest tenth around the can with a string. This is the circumference
2. Write this information in the data table
3. Measure the distance of the top of the can from one end to the other. This is the diameter.
4. Write this information in the data table
5. Repeat step 1 through 4 with all of the other cans.

- **Outcome instructions**

1. Enter the data in a table below

Object	Diameter (d) in cm	Circumference (C) in cm	Ratio of C to d (C/d)

2. The ratio of C to d in the last column should be similar

<https://wa-appliedmath.org/>

## Lab Data Collection

Student: \_\_\_\_\_ Date: \_\_\_\_\_

Unit: \_\_\_\_\_

Lab Title:

Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

Summary Statement:

Other Assessment(s)

Washington  
Applied  
Math  
Council

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